Table P-11: Assumptions and Calculations to Estimate the Contribution to Agricultural Soil Organic Carbon from Application of Animal Manure and Sewage Sludge to Mineral Soils

	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001
Total N (Tg)[1]	**2.76**	**2.84**	**2.83**	**2.90**	**2.92**	**2.90**	**2.94**	**3.00**	**3.04**	**3.04**	**3.09**	**3.11**
Manure N[1]	2.71	2.78	2.77	2.83	2.85	2.82	2.85	2.91	2.95	2.94	3.00	3.01
Sewage Sludge N[1]	0.05	0.06	0.06	0.07	0.08	0.09	0.09	0.09	0.09	0.09	0.10	0.10
Assimilative Capacity (metric ton / ha)[2]	**0.120**	**0.120**	**0.120**	**0.122**	**0.122**	**0.122**	**0.122**	**0.122**	**0.122**	**0.122**	**0.122**	**0.122**
Area covered by Available N (ha x 10^6)[3,4]	**22.98**	**23.64**	**23.61**	**23.75**	**23.97**	**23.78**	**24.08**	**24.59**	**24.89**	**24.90**	**25.36**	**25.47**
Cropland Receiving Manure	7.78	8.58	8.04	8.42	8.51	6.69	8.66	9.27	9.30	9.17	9.34	9.34
Grazing Land Receiving Manure	15.20	15.06	15.57	15.32	15.46	17.09	15.42	15.32	15.59	15.73	16.02	16.13
Contribution to Agricultural Land Soil C (Tg C)[5]	**5.79**	**5.83**	**5.94**	**5.90**	**5.95**	**6.31**	**5.95**	**5.98**	**6.07**	**6.11**	**6.22**	**6.26**
Contribution to Cropland Soil C	0.78	0.86	0.80	0.84	0.85	0.67	0.87	0.93	0.93	0.92	0.93	0.93
Contribution to Grazing Land Soil C[5]	5.01	4.97	5.14	5.06	5.10	5.64	5.09	5.06	5.14	5.19	5.29	5.32

[1] Total N available to be applied to soils (this volume).

[2] Assimilative Capacity is the national average amount of sewage sludge and manure-derived N that can be applied on cropland without buildup of nutrients in the soil (Kellogg et al. 2000).

[3] Area which received manure or sewage sludge amendments was calculated based on the available N for application divided by the assimilative capacity. The 1992 assimilative capacity rate was applied to 1990 - 1992 and the 1997 rate was applied to 1993-2000.

[4] Some small, undetermined fraction of this applied N is probably not applied to agricultural soils, but instead is applied to forests, home gardens, and other lands

[5] Soil C stock is calculated as the area covered by available N multiplied by a national average annual rate of soil C change per ha (0.1 metric ton/ha-yr for croplands and 0.33 metric ton/ha-yr for grazing lands).from 50,000 simulations (Ogle et al. in review).